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B. R. Townend

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BY

B. R. TOWNEND,
L.D.S.Lpool.

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Non-Surgical Removal of Teeth—A Historical Survey.

By B. R. TOWNEND, L.D.S.LPOOL.

It is a rather amazing thing that the extraction of the tooth, the supreme operation of the dental surgeon, the procedure which is, unfortunately perhaps, automatically linked up with his name in the minds of the greater proportion of mankind, should have been so feared in the past by both operator and patient alike. It is equally amazing that the same operation should have been carried out by primitive races as a ritual practice certainly from Neolithic times in different and widely separated parts of the world notably Australasia and Africa. It is likely, however, that this ceremonial extraction being confined to the incisor region of the mouth was less fraught with difficulties and untoward after-effects than in the case of teeth extracted in the premolar and molar regions. It is also likely that the bulk of dental disease, more particularly caries, occurred in the back teeth in primitive jaws. The cranio-logical evidence supports this view. Abscess formation due to rapid attrition, which was in turn due to the coarse and gritty nature of the foodstuff, followed by exposure of the pulp was very common, and there is some indication that the onset of interstitial caries was usually after the crown of the tooth had been worn down past the contact point. It is probable that the incidence of caries took place later in the individual's life than it does to-day and the comparative rarity of caries in the deciduous dentition supports this view. This early immunity tided over the period when decay in occlusal pits and fissures takes its present day toll. It follows that the bulk of the work of the early tooth puller consisted of the removal of posterior teeth, always a more difficult operation than the extraction of anteriors, particularly when we take into consideration the inefficient instruments which have only been displaced during the last hundred years by our modern forceps, elevators, &c., designed on anatomical principles. This factor of difficulty and the greater risk of unpleasant after-effects probably accounts for the diffidence with which the old writers faced the problem of extraction of the teeth, their great cautiousness and procrastination before the final sacrifice was made, and the wealth of remedies which were invented to make teeth loosen and fall out.

This essay is an attempt to set forth some of these remedies in something like chronological order. I make no claim to have exhausted the subject—it is well nigh inexhaustible. I have merely collected a few examples from my notebooks and other sources which will perhaps give some slight indication of the wealth of the material and how it has interested the leech throughout the ages and in many lands. It will also illustrate the innate lack of inventiveness of the human mind, how generation after generation has been content to go on carrying out the same practices simply because their predecessors had carried them out, when actually the practices themselves could have had little or no value. This slavery to tradition and prejudice is perhaps the most salient characteristic of the mind of "homo sapiens."

Our first hint of the temerity of the doctor to extract other than very loose teeth is found in the fact that Celsus Aurelianus makes mention of a leaden

instrument used for the extraction of teeth (*plumbeum odontogogon*) which was exhibited in the temple of Apollo at Delphi. This temple was a shrine of Æsculapius, the God of Medicine and the reputed inventor of dental extraction. Aurelianus, Erasistratus and other ancient writers, have deduced from this that it was only permissible to extract teeth which were loose enough to be taken out with a leaden instrument. Guerini ("History of Dentistry," pp. 46-47), quotes Serre to the effect that if a tooth was so loose that it could be extracted with a leaden instrument, it could just as easily be extracted with the fingers. Serre considers that the pincers were merely a model and that the actual instruments for practical use would be made of iron. The truth is a matter of speculation, but the direct evidence of the ancient writers and the indirect evidence of subsequent trends of thought seem to contradict the opinions of Serre and Guerini.

Hippocrates, or perhaps it would be more correct to say one of the compilers of the corpus of medical work known as the Hippocratic Collection, is quite definite in his views concerning extraction. In the book "*De Affectionibus*," he says: "In cases of toothache if the tooth is decayed and loose it must be extracted. If it is neither decayed nor loose, but still painful, it is necessary to desiccate it by cauterising."

The tradition, once started, rapidly grew into a spate, and we find one after another of the classical authors telling the same story. Cornelius Celsus (25 B.C. to A.D. 50) in his work "*De Re Medica*," Lib. VI, Cap. 9, says: "If a tooth is decayed it is not necessary to pull it out unless the circumstances compel, but then, to all the fomentations which have been given above must be added certain more powerful prescriptions which relieve pain. . . ." Then follow certain recipes. The text continues: "If the pain necessitates the tooth being pulled, then pepper seed freed from its skin or an ivy berry treated in the same way and inserted in the cavity of the tooth will split the tooth and cause it to fall into pieces. Also the sting of the flat fish which the Romans call '*pertinaca*' and the Greeks '*trygon*' if burnt and mixed with resin and placed round the tooth will loosen it. Crushed alum placed in the cavity will also have the same effect. This substance is more conveniently applied if wrapped in wool because in this way it relieves the pain and conserves the tooth."

We find our spate in full flood when we come to the works of Caius Plinius Secundus (A.D. 23 to 79). Pliny is rather an important figure because his "*Natural History*" served as a collecting ground of an amazingly vast collection of ancient lore and the streams from this reservoir flowed through the Middle Ages right down to recent times. Unfortunately much of his material was of no scientific value, he was incredibly credulous but no more so than his followers who swallowed his tales holus bolus with little or no discrimination, and many fantastic and bizarre ideas and remedies were accepted as gospel through the ensuing ages to the great detriment of the cause of science.

Let us consider some of his remedies purporting to cause teeth to fall out without surgical interference. My references are taken from Bostock and Riley's translation of his "*Natural History*," Bohn Classical Library, 1855. In Book XXII, Cap. 57 we read: "In the grain known as spelt there is a small worm found similar in appearance to the teredo; if this is put with wax

into the hollow of carious teeth they will come out, or indeed, if the teeth are only rubbed with it." In Book XXIII, Cap. 37, amurca of olives (the lees of olive oil) boiled down to the consistency of honey with omphacium (a liquid extracted from vine stems) is said to "extract decayed teeth." Book XXIV, Cap. 11, tells us that: "The larger cedar produces a pitch known as 'cedria' which is very useful for toothache, it having the effect of breaking the teeth and extracting them and so allaying the pain." It is interesting to note that frankincense was supposed to have the same properties up to quite recent times. Celsus is echoed in Book XXIV, Cap. 47, where it is stated that: "Incisions are sometimes made in the ivy to obtain the juice which is used for carious teeth, it having the effect of breaking them, it is said; the adjoining teeth being fortified with wax against the powerful action of the juice." The relation of dental disease and ivy has been discussed by Lilian Lindsay in "The Sun, the Toothdrawer and the Saint," *British Dental Journal*, November, 1933. "The root of ranunculus (crowfoot) if chewed for some time in cases of toothache, will cause the tooth to break." (Book XXV, Cap. 109.) In Book XXVIII, Cap. 11, we have a remedy which in protean forms has had a wide range in folkloristic medicine. "It is asserted that any plant which may have happened to have grown in a human skull, if chewed, will cause the teeth to come out." This appears to be pure magic of the sympathetic variety. As the teeth loosen in a skull so anything associated with it will produce the same result in anyone who comes into contact with it. In Book XXX, Cap. 8, we find "Ashes of burnt earthworms introduced into carious teeth make them come out easily." "The cabbage caterpillar will make the teeth come out by mere contact only." "The slough of a snake, warmed with oil and torch pine resin, frankincense and oil of roses, introduced into hollow teeth will make them come out without pain." "Slough of a white snake mixed with wax will extract a tooth very expeditiously." To conclude the Pliny references in Book XXXII, Cap. 26, we are told that if: "The sting of the pastinaca (sting ray) is pounded and applied to the teeth with white hellebore, it has the effect of extracting them without the slightest difficulty."

Archigenes of Apamea who lived in Rome during the end of the first and the beginning of the second century A.D. was greatly opposed to the extraction of teeth unless absolutely necessary and he practised trephining of the tooth, thus opening up the pulp chamber. He also recommends the use of a piece of slough of a serpent pressed on to a tooth in order to make it fall out.

Claudius Galen (A.D. 131 to 204) suggests for the same purpose the use of root of pyrethrum kept in very strong vinegar for forty days and then pounded. The remedy is applied after well cleaning the offending tooth and protecting the others with wax. At the end of an hour the tooth can be drawn out with the fingers or the mere help of a style. The same effect can be obtained, says Galen by the application of blue vitriol mixed with very strong vinegar. Galen also repeats the prescription of Pliny which uses the caterpillars and worms of cabbage, amplifying it by stating that if an upper tooth is to be removed the worms found in the top leaves should be used and if a lower tooth, the worms found in the lower leaves.

Celius Aurelianus whose period is doubtful, but probably about the fourth century A.D., warns against the danger of extracting a tooth when the pain of

toothache is acute, a prejudice which is still with us to-day, even in the minds of doctors.

It is necessary at this point to deviate a little from our chronological sequence to consider the growth of the Arabian School of Medicine in relation to its bearing upon our subject. The genius of the Arabians in the early centuries of the Christian era kept the light of classical culture burning through the Dark Ages and also contributed a considerable amount of original material to the storehouse of Science. There is good reason to believe that this School received its stimulus from the Greek and Roman writers through the Nestorians who were driven out of Byzantium in the fifth century A.D. and settled in Mesopotamia carrying their learning with them. There is extant a book written in Syriac probably by one of these exiles in the early centuries of our era called "The Book of Medicines" translated by the late Sir E. A. Wallis Budge, which adds something to our story.

The following extracts will show a close affinity with the Latin authors :—

"Medicines which uproot the molars without the use of an instrument."

"Take the bark of the root of a mulberry tree and pyrethrum; pound them and macerate them in strong vinegar in the sun until the mixture hath the consistency of honey and apply it to the molar once or twice a day and it will become dislodged."

"Or take pyrethrum and macerate it in strong vinegar forty days and crush it and put it in a vessel. When the time cometh for using it, put a layer of wax round the teeth which cause pain, and loosen them and apply some of the medicine to them. Then wait one day and lift the tooth with thy fingers and they can be removed. Or take hold of them with an iron instrument and they can easily be removed."

"Or crush lead ore in vinegar and apply to the teeth in a similar manner."

"Or crush pyrethrum in strong vinegar for three or four days and then lay it on the teeth which are causing pain, taking great care not to touch the other teeth with it for it is meet that they should be loosened carefully and not smeared with the medicine. Do this for three or four days, for by this means they may be loosened and may be removed without pain."

"Or take the roots of wild bitter herbs and treat them like pyrethrums and use them according to the instructions written above."

In spite of the wisdom of the Arabians, we find many of the same prejudices extant that we found among the classical authors. In fact one of the characteristics of the Arabian medical art was its aversion to the shedding of blood and its efforts to find ways and means of avoiding this. Rhazes in the ninth century used coloquintida and arsenic to promote the non-surgical removal of teeth. Avicenna (A.D. 980 to 1037) used white arsenic, orpiment, coloquintida, tithymallus, the fat of frogs, &c., to eradicate diseased teeth. He remarks, however, that before using them it is advantageous to detach the gum all round. (Guerini, "History of Dentistry," p. 125). Abulcasis (A.D. 1050 to 1122) although he does not suggest the use of any eradicating remedies is decidedly cautious in his attitude towards extraction telling us that: "You should not extract a tooth in a hurry because it is a precious organ and has no substitute."

Leaving the Arabians, we find Ætius of Amida in the fifth to sixth centuries repeating the earthworm recipe which we continue to meet throughout the

mediæval times and later. He says that to extract teeth painlessly "without iron," fill the cavities with ashes of earthworms. The tooth must first be thoroughly scraped and the gums cut loose about it. "Therefore use this remedy with confidence, for it has already often been celebrated as a mystery."

Vincent of Beauvais, who lived in the thirteenth century, extols the use of coral for many disorders. He says that decayed teeth are filled with it in order to extract them.

Petrus Hispanus (Peter of Spain), who became Pope John XXI, wrote during the thirteenth century an influential and representative book on mediæval medicine. He advises that a decayed tooth may be easily extracted if it is touched with bitch's milk, or if the hot root of jusquiam is applied to its roots, but in the latter case one should avoid touching the other teeth as they will fall out also.

John of Gaddesden, who practised in Oxford during the first half of the fourteenth century, wrote a curious medical book called "Rosa Anglica," in which are found several interesting prescriptions calculated to make the teeth fall out. One of them consists of dried cow's dung. The excrement of crows, ravens and other birds and beasts was a common remedy of the mediæval leech for toothache and other disorders. Filth medicines, or as the Germans call them, "Drekapotheke," are found in the materia medica of all times and all countries. Their supposed efficacy probably depended upon the idea that disease was caused by an evil spirit entering the body, so the medicine man prescribed nauseous and disgusting drugs which would tend to make the body uninhabitable for the intruding demon. John of Gaddesden also advises to anoint the tooth with the fat of a green frog. He is so convinced of the efficacy of this remedy that he states that if an ox grazing should chew a little frog with the grass its teeth would fall out in an instant! Again we have here an example of an age-old and widespread belief. Frogs appear in a dental recipe in the Assyrian Medical Texts, and it was a common belief in this country and elsewhere within very recent times that if you placed a frog in a child's mouth which was sore, a cure would be effected.

Guy de Chauliac, who was born about 1300, cast some doubt on the efficacy of supposed tooth-eradicating remedies. He says: "The Ancients mention many remedies which draw out the teeth without iron instruments or which make them more easy to draw out, such as the milky juice of the tithymal with pyrethrum, the roots of mulberry and caper, citrine arsenic, aqua fortis, the fat of forest frogs, &c. But these remedies promise much and operate but little (*mais ils donnent beaucoup de promesses et peu d'opérations*)." It was many years after his time before this rational view was taken up. We find Giovanni d'Arcoli (Arculanus), who died in 1484, recommending the use of the cautery and application of boiling oil or heated incense to break teeth.

In "A Leech Book of the Fifteenth Century," (Warren R. Dawson), bird's dung is again found in the following recipe:—

"For aching of a hollow tooth. Take raven's dung and put it in a hollow tooth and colour it with the juice of pellitory of Spain so that the sick recognise it not nor know not what it be; and then put it in the tooth and it shall break the tooth and take away the aching and as some men say it will make the tooth fall out."

The sixteenth century gives us that model of terseness which is quoted by

Mrs. Lindsay in her "Short History of Dentistry," from Vicary's "The Englishman's Treasure or the True Anatomy of Man's Body" (1548):—

"To make an aking tooth fall out of himselfe without any instruments or yren tooles"—"Take wheat" !

Earthworms crop up again in a recipe from the "Fairfax Household Recipe Book" compiled during the seventeenth century.

"To pull out a toothe."

"Take wormes when they be a-gendering together. Dry them upon a hott tyle stone, then make powder of them and what toothe ye touche wth yt will fall out."

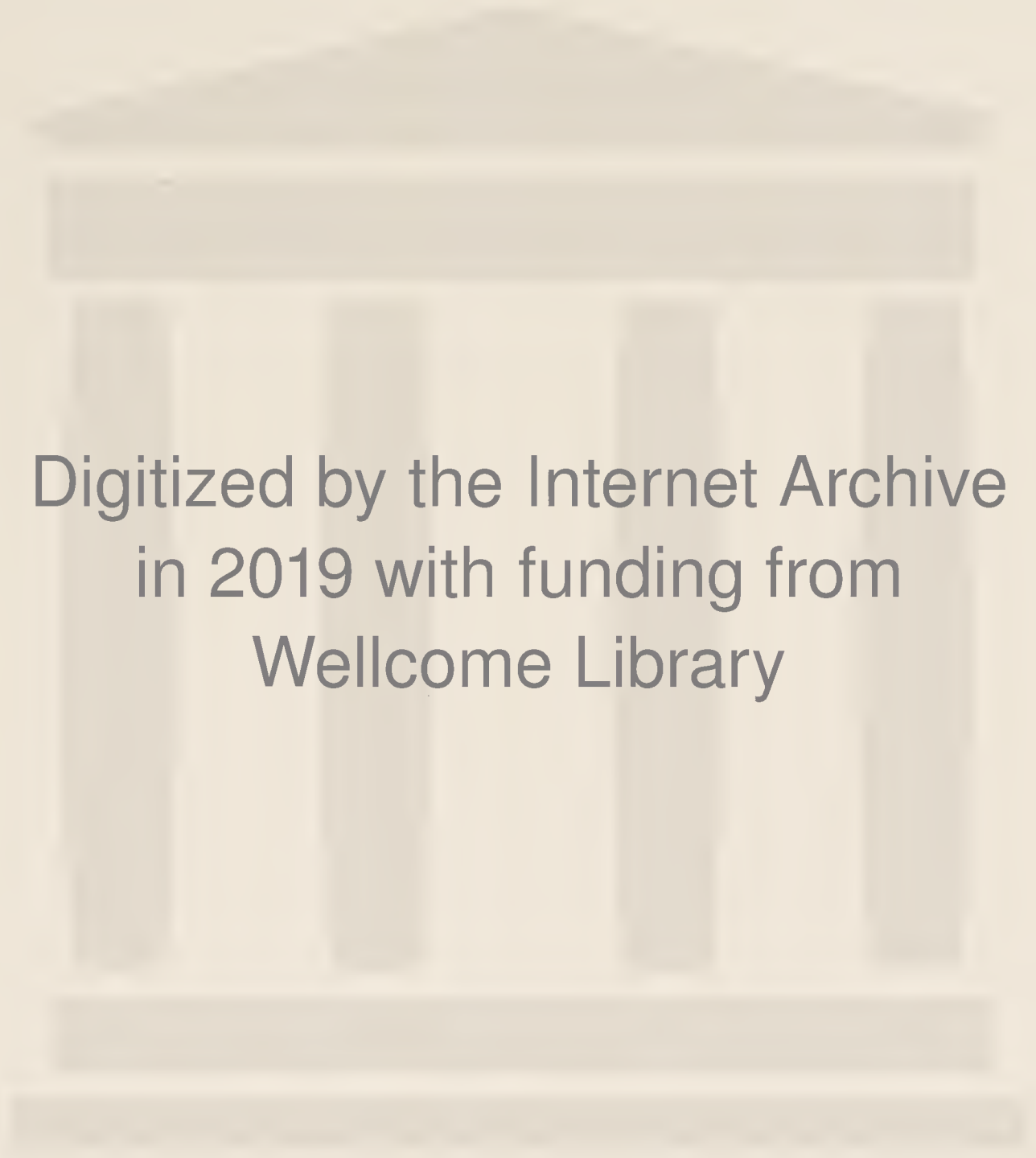
"Or R₁ wheat flower and mixe it with ye milke of spurge and thereof make a paste or dowe (dough) wth yt wch fille ye hollow of ye toothe and leave yt in a certain time and ye toothe will fall out."

In a work by Lord Ruthven of 1654, we have a prescription practically identical with the last one quoted.

In conclusion allow me to go back to a prescription from the great Coptic papyrus of Meshaik which was written in the ninth or tenth century A.D., and is quoted by Warren R. Dawson in "Magician and Leech."

"A tooth to be extracted with instruments (lit. 'iron'). Hellebore of good quality and gall; apply to the region of the cheek where the molar is that you wish to extract and you will be astonished!"

It is interesting to speculate as to what form your astonishment would take.



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